

(No Model.)

P. B. TINGLEY.
NON-REFILLABLE BOTTLE.

No. 580,239.

Patented Apr. 6, 1897.

Fig. 1.

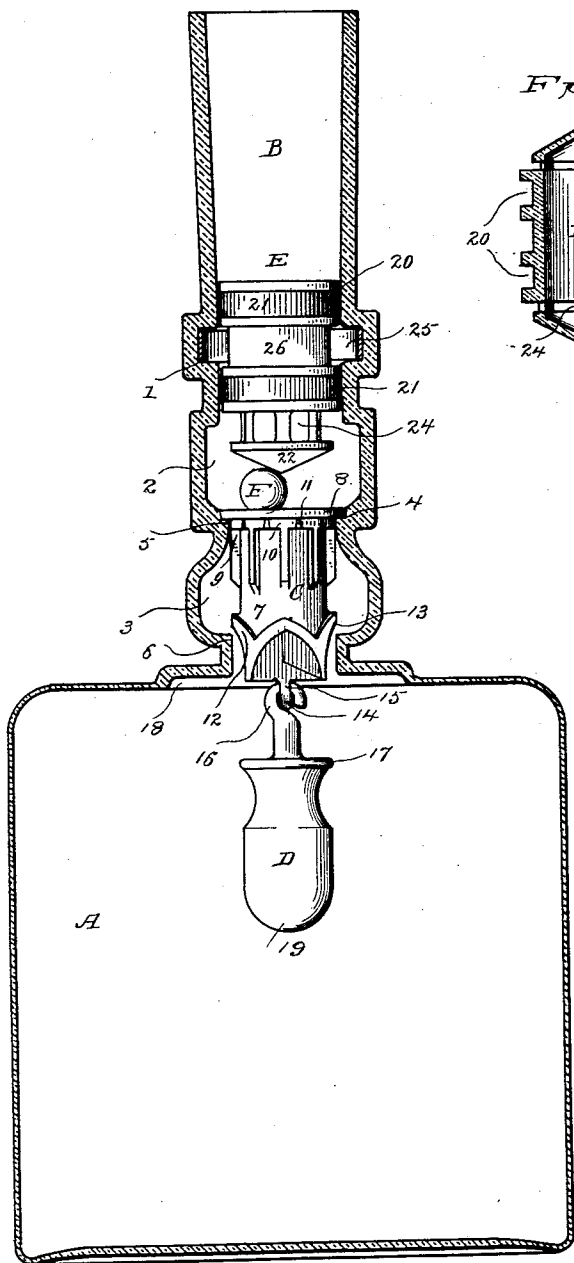


Fig. 2.

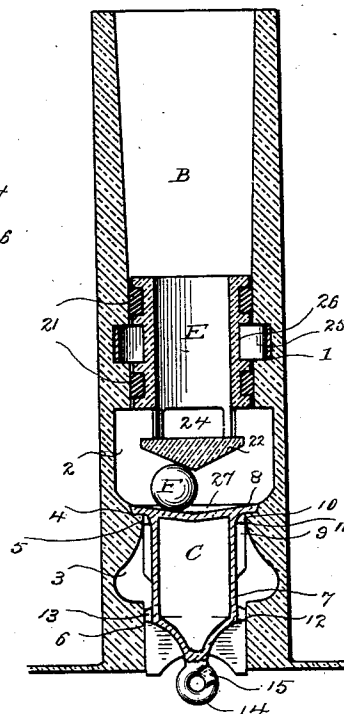


Fig. 4.

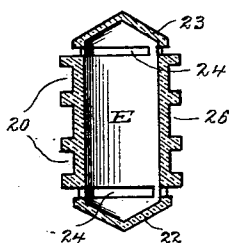
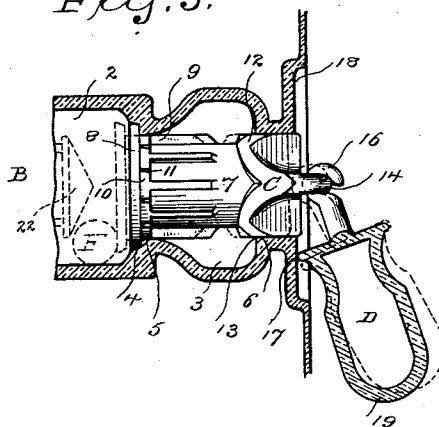


Fig. 3.



WITNESSES

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NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 580,239, dated April 6, 1897.

Application filed February 17, 1896. Serial No. 579,532. (No model.)

To all whom it may concern:

Be it known that I, PHILO B. TINGLEY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Non-Refillable Bottles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide a bottle which will protect its contents perfectly against evaporation and the entrance of outside air, and which will permit the contents to be poured out freely at any time, but which when once filled and closed will prevent refilling or the pouring in of any liquid no matter whether the bottle is partially or wholly empty or in what position it may be held or what appliances are used, the special purpose being to guarantee to purchasers at all times that the liquid poured from the bottle is the liquid placed there by the original bottler, thus protecting both the original bottler and the purchaser, the former against the use of his bottle, label, &c., in connection with goods of an inferior quality, and insuring to the purchaser that he shall get just what he pays for.

With these ends in view I have devised the novel non-refillable bottle of which the following description, in connection with the accompanying drawings, is a specification, letters and numbers being used to designate the several parts.

Figure 1 is a section of my novel bottle, the closing mechanism being in elevation; Fig. 2, a similar view showing a form in which the sides of the neck of the bottle are made straight and a shallow recess in the top of the bottle surrounding the neck is dispensed with; Fig. 3, a sectional view, partly in elevation, showing the position assumed by the pendant when the bottle is tilted, the position assumed by the valve in pouring being indicated by dotted lines; and Fig. 4 is a section of the guard detached.

A denotes the bottle, and B the neck of the bottle. This neck is shown as provided with a recess 1 to receive a spring, a valve-chamber 2, an air-chamber 3, and a valve-seat 4 at

the lower end of the valve-chamber. The action of the air-chamber, which is located between the valve-seat and the body of the bottle, is to facilitate the interchange of air and water.

The neck may be made straight on its outer sides, as shown in Fig. 2, or the exterior of the bottle may conform to the interior, as in Fig. 1, if preferred.

The closing mechanism consists of a valve C, from which is suspended a pendant D, which is free to swing in the body of the bottle, a guard E, and a ball F in the valve-chamber between the guard and the valve.

The guard, valve, and pendant may be made of any suitable material—as, for example, glass, vulcanized fiber, or metal, or partly of either substance or of other substances—it being wholly immaterial, so far as the principle of my invention is concerned, of what material the parts are made. The valve is in practice entirely buoyant, so that it will float in liquid. For that reason I have indicated it as made hollow. No matter of what material it is made it must be sufficiently large to displace more than its own weight of liquid.

The pendant is made so as to be buoyant when acted upon by the liquid, its weight, however, acting to seat the valve when it is not acted upon by the liquid. In other words, the action of the liquid upon the pendant is to neutralize the weight of the pendant sufficiently to permit the outgoing liquid to unseat the valve. The instant the bottle is placed in such a position, however, that the liquid ceases to act upon the valve the weight of the pendant will be sufficient to seat the valve, the pendant dropping into contact with the bottle, as shown in Fig. 3, and weight causing the pendant to act as a lever and to pull the valve to its seat. Between the valve-chamber and the air-chamber is a neck 5, and between the air-chamber and the interior of the bottle is a neck 6.

7 denotes the body of the valve, which is made long enough so as to be in engagement with necks 5 and 6 in both the opened and closed positions.

8 denotes the valve-disk, which closely engages seat 4 in the closed position, as clearly shown in Figs. 1 and 2.

The periphery of the valve-disk is preferably made to incline downward and inward and the wall of the neck above the valve-seat to correspond therewith. This is in order to provide for the passage of air the instant the valve leaves its seat in the pouring operation, it not being necessary, when the disk and wall are at an inclination to the center line of the valve, that the disk should rise wholly out of its seat in order that air may pass.

9 denotes ribs or projections which engage neck 5 to hold the valve central, but permit it to move freely in the neck and also leave ample space for the liquid to pass when the valve is unseated in the pouring operation.

10 denotes a ring on the valve, just under the valve-seat, which fills neck 5 when the valve is seated, with the exception of small openings 11, which are provided for the purpose of permitting air to pass from the inside of the bottle when the valve is lifted slightly by suction from above, the openings being so small, however, that liquid will not pass into the bottle, but the valve will instantly seat itself as soon as the air has passed.

12 denotes ribs or projections which engage neck 6 to hold it central, but permit it to move freely in the neck and also leave ample space for the liquid to pass when the valve is unseated in the pouring operation. It will be noticed in Figs. 1 and 3 that these ribs are so shaped as to leave openings 13 for liquid to pass slowly from the interior of the bottle into the air-chamber until the valve becomes unseated to prevent suction.

It will of course be understood that the exact shape of the body and of the ribs is not of the essence of my invention, but may be varied to an almost unlimited extent so long as the essential features are retained.

At the lower end of the body is a ring 14, which is provided with a reduced portion 15, adapted to be engaged by the opening in a hook 16 on pendant D when the latter is held at right angles to the body, which can only occur when the valve and pendant are both removed from the bottle, it being impossible to detach the pendant when the parts are in operative position. The shape of the pendant, likewise, is not of the essence of my invention.

The pendant is shown as provided with a bearing-surface 17, adapted to bear upon the inner surface of the top of the bottle, as clearly shown in Fig. 3. The top of the bottle may or may not be provided with a recess 18.

The action of the pendant will be clearly understood from Fig. 3. It is made heavy enough, so that when the valve is not acted upon by the liquid it will draw the valve to its seat and retain it there, as shown in Fig. 3, the base of the pendant, which I have indicated by 19, serving as a weight and bearing-surface 17 as a fulcrum by which the valve is held seated when the bottle is tilted until the valve is lifted from its seat by the pressure of the liquid upon the base thereof. The pendant, however, is not heavy enough to

prevent liquid within the bottle from neutralizing its weight sufficiently to permit the valve to be unseated as soon as the weight of the liquid is caused to act on the base of the valve, liquid passing freely from the interior of the bottle to the air-chamber, and vice versa, during the pouring operation, and air of course passing into the air-chamber from the valve-chamber as soon as the valve is unseated. Guard C is shown as provided with recesses 20, which receive rings 21, which are preferably of cork. These close the neck perfectly, so that liquid cannot pass out from the bottle except through the guard, which is shown as made hollow, so as to permit the liquid to pass freely.

22 denotes an inverted cone-shaped plate, or a cup, if preferred, at the lower end of the guard, and 23 a similar plate or cup, which may or may not be placed at the top of the guard, openings 24 being provided above and below said cone-shaped plates, respectively, so as to permit liquid to pass into and out of the guard freely, but prevent a tool or other appliance from being passed through the guard to act on the valve.

The guard is held in position in recess 1 in the neck by means of a spring or springs 25, two being ordinarily used, which lie partially in a socket 26 in the guard and partially in recess 1 in the neck, as clearly shown in Figs. 1 and 2. If preferred, a cork or other spring ring may be used in lieu of the springs, in which event closing-rings 21 might be dispensed with. These springs are wholly protected from the liquid by rings 21 and act to hold the guard firmly in position, so that when the guard has once been inserted it cannot be removed except by breaking the neck of the bottle. It will be seen that this guard renders it wholly impossible to tamper with the valve from the outside. The action of ball F will be clearly understood from Figs. 1, 2, and 3. When the valve is seated, it will roll toward the center of the valve, which is preferably provided with a cone-shaped depression or recess, as at 27, for that purpose, the ball engaging cone-shaped plate 22 and rolling around in the depression when the bottle is turned, but still acting to hold the valve seated and to prevent refilling of the bottle by shaking it vertically.

It will be noticed that the inclination of cone-shaped plate 22 is greater than the incline of depression 27, so that while the ball will roll toward the center of the valve C when the latter is seated it will be quite free to roll away, so as to permit the valve to be lifted from its seat in the pouring operation.

Having thus described my invention, I claim—

1. The combination with a bottle-neck provided with a valve-chamber a valve-seat an air-chamber between the valve-seat and the body of the bottle and necks above and below said air-chamber, of a buoyant valve which passes through the air-chamber and engages

the necks and is provided with a disk adapted to engage the valve-seat and a buoyant pendant pivotally attached to the lower end of the valve and adapted to swing freely in the bottle, said pendant having a surface adapted to engage the top of the bottle when the latter is tilted and acting to hold the valve seated until the weight of the pendant is neutralized and the valve is lifted by the outward movement of liquid.

2. The combination with a bottle-neck provided with a valve-chamber a valve-seat an air-chamber and necks 5 and 6, of a buoyant valve having a disk adapted to engage the valve-seat, ribs 9 and 12 which engage said necks but permit liquid to flow freely in the pouring operation and openings 13 in ribs 12 which permit passage of liquid between the bottle and the air-chamber, and a buoyant pendant pivotally attached to the lower end of the valve which acts to hold the valve seated until the weight of the pendant is neutralized and the valve is lifted by the outward movement of liquid.

3. The combination with a bottle-neck provided with a valve-chamber a valve-seat an air-chamber and necks 5 and 6, of a buoyant valve having a disk adapted to engage the valve-seat, ribs which engage said necks but permit liquid to flow freely in the pouring operation and a ring 10 which engages neck 5 under the valve-seat and is provided with openings 11 which permit air to pass freely from the air-chamber to the valve-chamber the instant the disk leaves its seat, and a buoyant pendant pivotally attached to the lower end of the valve and acting to retain the latter seated until the weight of the pendant is neutralized and the valve is lifted by the outward movement of liquid.

4. The combination with a bottle having a valve-seat and a buoyant valve having a disk adapted to engage said seat, of a buoyant pendant pivotally attached to the lower end of the valve and having a bearing-surface adapted to engage the top of the bottle when the latter is tilted to hold the valve at the closed position until the weight of the pendant is neutralized and the valve is unseated by the outward movement of liquid.

5. The combination with a bottle-neck hav-

ing a valve-seat, of a valve having a disk adapted to engage said seat and at its end a ring 14 provided with a reduced portion or recess 15, and a buoyant pendant D having a hook 16 adapted to be detachably secured to said ring when held in a predetermined position.

6. The combination with a bottle-neck having a valve-seat a valve having a disk provided with a cone-shaped depression 27 and adapted to engage said seat and a buoyant pendant D pivotally attached to the lower end of the valve, of a guard E in the neck of the bottle and having at its lower end a cone-shaped plate 22 and a ball which normally remains in said depression and engages the cone-shaped plate but rolls out when the bottle is tilted and permits the valve to be unseated by the outward movement of liquid.

7. The combination with a bottle-neck having a valve-seat a valve having a disk adapted to engage said seat and a cone-shaped depression 27 and a buoyant pendant pivotally attached to the lower end of the valve and swinging freely in the bottle, of a guard fixed in the neck of the bottle and having at its lower end a cone-shaped plate 22 and a ball lying in the depression and engaging the said cone-shaped plate in the closed position as and for the purpose set forth.

8. The combination with a bottle-neck having a valve-seat and a recess 1, and a valve having a disk adapted to engage the seat, and a buoyant pendant D pivotally attached to its lower end, of a guard having recesses 20 and a socket 26 between said recesses, closing-rings in said recesses adapted to prevent access of liquid to the socket 26 from either side and a spring 25 engaging the socket 26 and recess 1 in the bottle-neck whereby the guard is locked in position.

9. In a device of the character described, the combination with the buoyant valve, of the combined weight and float pendant pivotally attached at its lower end.

In testimony whereof I affix my signature in presence of two witnesses.

PHILO B. TINGLEY.

Witnesses:

L. C. RUNYON,
C. S. SOMMEL.